June 28, 2004

Ms. Zlata Kauzlaric
King County, Department of Executive Services
Exchange Building
821 Second Ave., Room 720
Seattle, WA 98104

Dear Zlata:

Pacific Technologies, Inc. is pleased to present the final *King County Repeatable Total Cost of Ownership Manual*. This document describes the methodology for and tools used to update the IT TCO model PTI developed as part of the Quantified Business Case engagement, incorporating the feedback on the draft provided by the County.

Please call me at (425) 881-3991 if you have any questions about this deliverable.

Sincerely,

Michael Silverman
Co-CEO
Pacific Technologies, Inc.

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Introduction

In early 2004, Pacific Technologies Inc., (PTI) prepared an Information Technology (IT) Total Cost of Ownership (TCO) study for King County, WA (the County). This document provides instructions for updating the TCO model utilized by PTI to develop an initial baseline of County IT operating costs.

Updating the model on a repeatable basis will enable the County to:

♦ Monitor progress against the 2003 IT TCO baseline

♦ Consistently compare data over time

♦ Identify key opportunities for improvement

♦ Enhance meaningful performance-management

This chapter presents:

♦ **Methodology –** the overall approach, approximate timing, and resource requirements associated with updating the model

♦ **Tools –** a brief overview of the specific workbooks and spreadsheets that comprise the TCO model

A. METHODOLOGY

Following the methodology outlined in this manual will ensure that the annual update to the IT TCO report is complete and consistent, providing an "apples-to-apples" comparison with data from previous years. The process involves quite a bit of detail, but is straightforward.

Every year, the lead person for the project will prepare a set of data collection workbooks for each of the 19 agencies involved, including some extra workbooks for ITS to gather data on charges to the agencies. As the agencies return the completed workbooks, the project lead will integrate the data into master workbooks. This data will automatically update the tables and graphs used in the TCO report. The project lead can then paste the updated tables and graphs into the report, make the necessary text edits, and produce the updated TCO report.

The refresh will take about two months from start to finish. The major steps and timing approximations follow:

1. Prepare / distribute data collection workbooks – one week

2. Receive completed workbooks – three weeks

3. Integrate data from workbooks into master workbooks – one week

4. Validate and analyze the data – two weeks

5. Update the TCO report – one week

6. Proofread / produce the TCO report – one week

The instructions in this manual assume a high skill level. The lead for this project will need advanced skills in Excel and Word as well as subject-area familiarity with information technology. Unless the lead is able to be on the project full time, some administrative assistance from an individual with good skills in document editing and production will also be necessary.

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Additionally, each agency will need to designate a lead person to fill out the data collection workbooks. For the larger agencies, this would be the analyst most familiar with the IT department's budgets, expenditures, and staffing levels. For the smaller agencies, this person is most likely the IT manager. The amount of time required for each agency lead to fill out the workbooks will vary from 4 to 24+ hours, depending on the size of the agency and the complexity of internal reporting systems.

B. TOOLS

The TCO model uses a set of Excel workbooks to gather, analyze, and format information. As detailed at the end of this section, there are five data collection workbooks, four master data workbooks, and two workbooks which analyze the data and present it in the format used for the TCO report. **There are numerous links between the workbooks. Keep all eleven files in the same directory to preserve these links. When you open the workbooks, be sure to choose "Update" in the initial dialogue box to refresh the links.** *Note that the workbooks sent to the agencies do not keep their links updated, and this dialogue box will not appear in them. Also note that these workbooks were created with Excel 2002. They may use features that require this version of the software. In addition, Word 2002 was used and may also utilize version specific features.*

The model is structured to report on 19 County organizational divisions, collectively called "agencies" throughout this document and the TCO report. **Note that, while the number of agencies can be reduced relatively easily, collecting data from more than 19 agencies would require significant changes to the model.** Either action will, of course, impact comparison with prior years. Within the workbooks, each agency is identified by a shorthand code as part of the tab name on each worksheet. The example below, (Exhibit 1-1) from the IT staffing master workbook shows four data tabs for the District Court, each containing the shorthand "5.Dist Ct" as an agency identifier

Exhibit 1-1: IT Staffing Master Data Tabs

Exhibit 1-2: Workbook's Shorthand for each of the 19 Agencies

Shorthand	Agency
1.Assess	Assessor
2.Council	Council
3.PAO	Prosecuting Attorney
4.Sup Ct	Superior Court
5.Dist Ct	District Court
6.Sheriff	Sheriff
7.BEEO	Executive (Budget/Executive/Economic Development/OIRM)
8.DCHS	Community and Human Services
9.DAJD	Adult and Juvenile Detention
10.Judicial	Judicial Administration
11.DDES	Development and Environmental Services
12.Pub Hlth	Public Health

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13.DNRP	Natural Resources and Parks
14.Transit	Transportation: Transit
15.DOT AFR	Transportation: Airport, Fleet Administration, and Road Services
16.DES Fin	Executive Services: Finance
17.DES HR	Executive Services: Human Resources
18.DES ITS	Executive Services: Information and Telecommunications Services
19.DES Other	Executive Services: Other

The remainder of this section provides more detail on the files that comprise the TCO model.

DATA COLLECTION WORKBOOKS

Four of the data collection workbooks go to all of the agencies, and a fifth one goes to ITS for additional information. These are:

♦ **King County IT Staffing Matrix – Agency** contains instructions and definitions for gathering IT labor effort and cost data

♦ **King County IT Goods & Services Request – Agency** contains instructions and definitions for gathering agency operating and maintenance expenditures for IT-related goods and services

♦ **King County IT Inventory Request – Agency** contains instructions and definitions for providing a count of agency servers, workstations, printers, and mobile devices

♦ **King County IT Budget Information Request – Agency** contains instructions and definitions for collecting IT-related budget figures

♦ **King County ITS Info Request** asks ITS for agency-specific chargebacks related to labor, goods and services, and major applications

MASTER WORKBOOKS

There are four master workbooks which aggregate the data from the corresponding agency data collection workbooks:

♦ **King County IT Staffing Master** contains three data sheets and one summary sheet for each agency, plus several summary sheets which aggregate data for all of the agencies

♦ **King County IT Goods & Services Master** has a sheet with goods & services for each agency, the goods & services and major application chargebacks from ITS, and a summary sheet

♦ **Kings County IT Inventory Master** contains an inventory sheet for each agency plus a summary sheet

♦ **King County IT Budget Master** contains a budget sheet for each agency along with a summary sheet

## ANALYSIS AND PRESENTATION WORKBOOKS

Two workbooks are used to aggregate the data from the master workbooks, perform analysis, and present it in a format ready to be pasted into the TCO report:

♦ **King County TCO Analysis** includes worksheets with tables and graphs which correspond to chapters and sections of the TCO report, along with intermediate analysis sheets and links to other workbooks

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♦ **King County Appendix B** contains three worksheets for each agency with the detailed tables and graphs used in Appendix B of the TCO report. *Please note – due to the complexity of the links contained in this file, it is necessary to open **King County IT Staffing Master** and **King County TCO Analysis** first to avoid an error message about missing links. If you open this file alone, use it for reference only and do not save any changes.*

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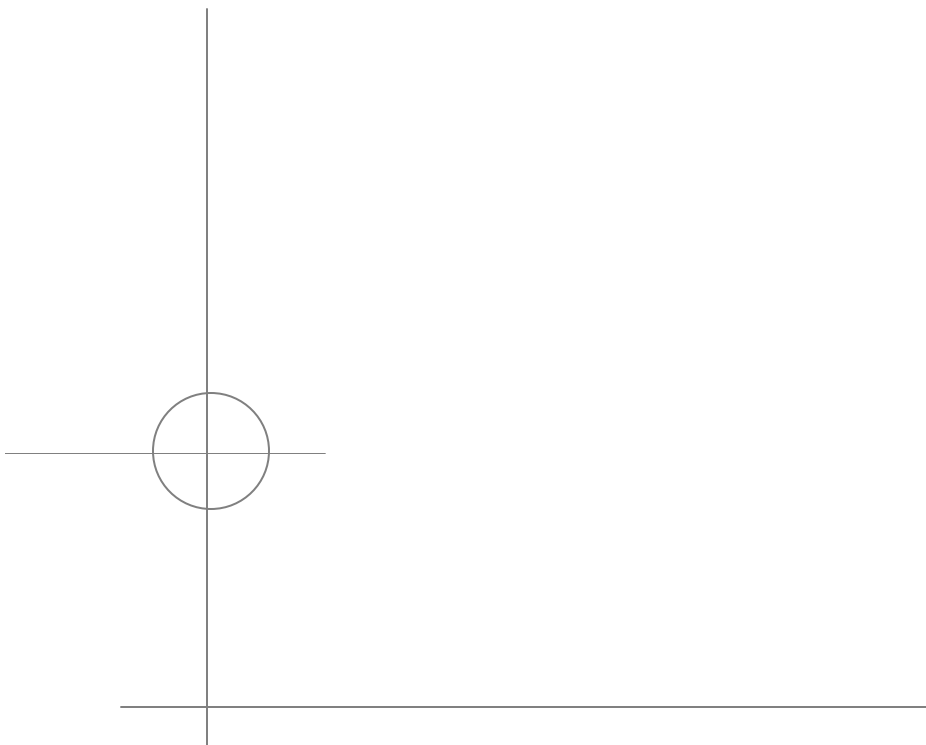
This chapter provides details on preparation and distribution of the data collection workbooks for the agencies, and on what the agencies need to do to fill them out. We have organized the chapter as:

♦ **IT Labor Expenditures –** describes use of the Staffing Matrix workbooks

♦ **IT Goods and Services Expenditures –** describes use of the Goods & Services workbooks

♦ **IT Inventory –** describes use of the Inventory workbooks

♦ **IT Budgets –** describes use of the Budget workbooks

♦ **ITS Info Request –** describes use of the workbook detailing ITS charges to the agencies

To save the agencies time and effort, preparation of all the workbooks includes copying the prior year's data submitted by each agency. Before beginning, it is strongly recommended that you back up all files in case you need to restore the originals.

A. IT LABOR EXPENDITURES

The IT Staffing Matrix is the most detailed and complicated workbook in the model. Each agency will receive a customized IT Staffing Matrix workbook prepared by the County's TCO project lead.

PURPOSE

These workbooks identify the cost and functional effort of each individual (employees and contractors) providing IT services to the County. This allows the calculation of cost per IT function, effort per IT function, service support ratios, labor distribution/efficiency measures, etc.

PREPARING THE WORKBOOKS

Open the file **King County IT Staffing Matrix – Agency.** On the "Instructions" tab, change the references to the current year and fill in current contact information. Save this as your new file to use in preparing the customized workbooks for each agency.

Now open the file **King County IT Staffing Master.** First check the three worksheets for each agency (e.g., Assess IT, Assess Biz, Assess Shdw, etc.) to make sure that they have a reasonable number of blank columns for any new staff they may need to add; 5 empty columns for new staff will probably be enough for all but the largest agencies. To add blank columns, do the following:

♦ Select the last data column in the form, the one just to the left of the FTE TOTAL column – *Exhibit 2-1*

♦ Right-click "Insert" to add as many blank columns as needed

♦ Right-click "Copy" on the last column, and "Paste" into the blank columns – this duplicates the data and formulas for the last column into all the new blank ones

♦ Select rows 1 through 66, beginning in the second new column and continuing to the last data column – *Exhibit 2-2*

♦ Delete the data they contain, if any – *Exhibit 2-3*

♦ Select and delete annualized pay data in these same columns for row 69

Exhibit 2-1: Last Data Column Selected

	J	K	L	M	
	Steve Kniss, Information Systems Professional 3, Roads Budget &	**Mindy Baker**, Information Systems Professional 3, Roads Budget &	**Weylin Heifner**, Information Systems Professional 2, Roads Budget &	FTE TOTAL	
				0.17	$
5	0.05	0.05	0.05	0.37	$
				0.01	$
	0.15	0.10	0.20	0.55	$
				0.21	$
				0.09	$
				0.07	$
0	0.10	0.10	0.05	0.48	$
	0.15	0.20	0.20	0.07	$

Exhibit 2-2: Duplicate Data Inserted and Columns Selected for Data Deletion

	K	L	M	N	O	P	
Roads Budget &	**Mindy Baker**, Information Systems Professional 3, Roads Budget &	**Weylin Heifner**, Information Systems Professional 2, Roads Budget &	**Weylin Heifner**, Information Systems Professional 2, Roads Budget &	**Weylin Heifner**, Information Systems Professional 2, Roads Budget &	**Weylin Heifner**, Information Systems Professional 2, Roads Budget &	FTE TOTAL	
						0.17	$
5	0.05	0.05	0.05	0.05	0.05	0.52	$
						0.01	$
5	0.10	0.20	0.20	0.20	0.20	1.15	$
						0.21	$
						0.09	$
						0.07	$
0	0.10	0.05	0.05	0.05	0.05	0.63	$

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Exhibit 2-3: Duplicate Data Deleted

	K	L	M	N	O	P	
Roads Budget &	**Mindy Baker**, Information Systems Professional 3, Roads Budget &	**Weylin Heifner**, Information Systems Professional 2, Roads Budget &				FTE TOTAL	
						0.17	$
.05	0.05	0.05				0.37	$
						0.01	$
.15	0.10	0.20				0.55	$
						0.21	$
						0.09	$
						0.07	$
.10	0.10	0.05				0.48	$
.15	0.30	0.30				0.87	$

At this point the model is ready to create the custom workbook for each agency. Follow these steps for each agency:

♦ As illustrated below, select the three worksheets (IT, Biz, Shdw) for the agency, and with the mouse pointer on the selected tabs, right-click "Move or Copy"
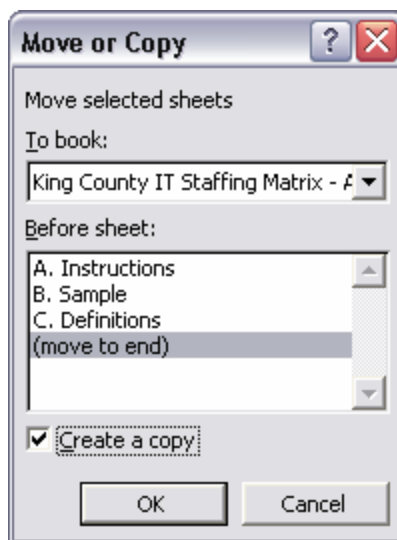
Exhibit 2-4: Move or Copy Spreadsheets within a Workbook
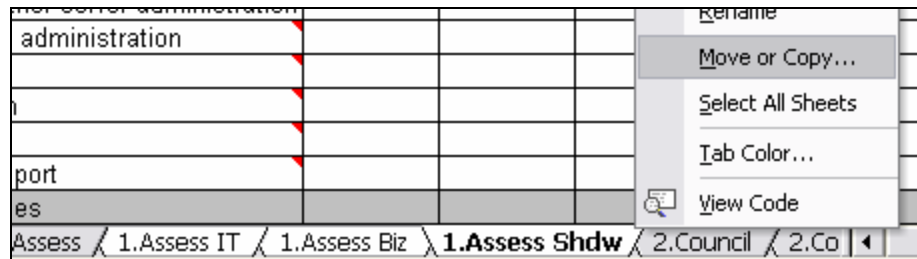
♦ In the dialogue window choose "King County IT Staffing Matrix – Agency" as the book, "Move to end" as the sheet location, and check the "Create a copy" box – *Exhibit 2-5*

Should any dialogue windows come up at this point, select "Yes" to all.

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Exhibit 2-5: Dialogue Window

♦ Your view will shift to the agency staffing matrix

♦ Click on the "A. Instructions" tab to make that the opening worksheet, and save the file with the appropriate name in place of "Agency" i.e., "King County IT Staffing Matrix – Assessor" in this instance

COMPLETING EACH WORKBOOK

The workbook itself contains complete instructions, a sample sheet, and definitions which we will not repeat here. A few recommendations to ensure that the workbooks are filled out consistently:

♦ Make sure the agencies understand the distinction between their own centralized IT staff, business unit IT staff within other agency divisions, and shadow staff

♦ Do not allow the agencies to add rows to or delete rows from their particular matrix – **this will adversely impact the IT Staffing Master**

B. IT GOODS AND SERVICES EXPENDITURES

The IT goods & services workbooks contain a single worksheet which focuses on agency IT operating and maintenance spending.

PURPOSE

These workbooks gather the goods and services (i.e., non-labor) costs of operating and maintaining the County's software and hardware, along with the costs of externally provided IT services and other miscellaneous IT costs. When combined with the labor cost information gathered in the IT staffing matrix, this provides the County with a total cost figure for various technology categories.

PREPARING THE WORKBOOKS

Open the file **King County IT Goods & Services Request – Agency.** On the "Overview" tab, change the FY dates to the current year. Also, be certain to fill in current contact information. Save this as your new file to use in preparing the customized workbooks for each agency.

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Now open the file **King County IT Goods & Services Master.** Do a find/replace on FY03 and 2003, and put in the appropriate fiscal year as shown below in Exhibit 2-6, selecting the entire workbook. *Note that this will not change anything in the cell notes.* If necessary, you will have to change these by hand on one of the agency sheets, and then paste them in to the rest. When done, save as your new master file.

Exhibit 2-6: Find and Replace Fiscal Year
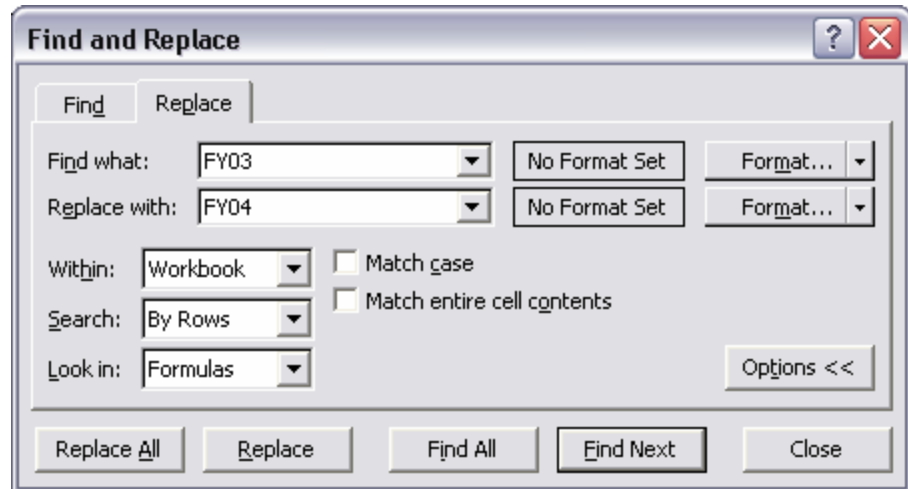
In the same way that you copied the agency worksheets from the IT staffing master to the agency files, copy and save a file for each agency here. **Be sure to click on the "Overview" tab before saving to ensure that this is the first worksheet the agency lead sees when opening the workbook.**

COMPLETING EACH WORKBOOK

SECTIONS 1– SUMMARY DATA

Section 1 is fairly straightforward, asking for total agency O&M expenditures and overall FTE levels.

SECTION 2 – SOFTWARE

This section asks for O&M spending in various categories related to software, as shown in Exhibit 2-7 below. Placing the cursor on the appropriate cell in the worksheet provides a definition of the desired data. **For personal productivity licenses, enter the amount spent by your agency in the cell to the right designated "Agency funded" ITS will provide additional amounts expended on behalf of CX funded agencies.**

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Exhibit 2-7: Software O & M Spending Categories

Software (O & M)	FY03 Actuals		
MSA system maintenance			
PeopleSoft system maintenance			
Fixed Asset system maintenance			
Other financial management system maintenance			
Other payroll system maintenance			
Other budget system maintenance	$31,000.00		
Other HR system maintenance			
Agency Packaged App 1			
Agency Packaged App 2			
Database system maintenance/license			
System software licenses			
Mainframe OS & utilities			
Desktop operating systems	$3,566.00		
Telco software			
Personal productivity licenses	$24,501.00	$7,981.00	Agency funded
Other		$16,520.00	CX funded - from IT
Totals	$59,067.00		

SECTION 3 – HARDWARE

This section asks for O&M spending in various categories related to hardware, as shown in Exhibit 2-8 below. Placing the cursor on the appropriate cell in the worksheet provides a definition of the desired data.

Exhibit 2-8: Hardware O & M Spending Categories

Hardware (O & M)	FY03 Actuals
Workstations	71,221
Servers	129,317
Mainframe computers	
Mid-range computers	
Mobile devices (e.g., laptops, handhelds, tablets)	1,548
Storage	20,868
Network equipment/infrastructure	1,029
Telco back-end	
Printers	2,687
Other	
Totals	$ 226,671

SECTION 4 – EXTERNAL SERVICES

This section asks for O&M spending with external (non-County) IT vendors, as shown in Exhibit 2-9 below. Note that the telecom items are for *IT related* expenditures such as data circuits and mobile data transmission, not for voice telecom. Placing the cursor on the appropriate cell in the worksheet provides a definition of the desired data.

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Exhibit 2-9: External O & M Spending Categories

External Services (O & M)	FY03 Actuals
Application development	342,529
Application maintenance	
Workstation support	
Server support	86,628
Telecom:	
Land-line related	157,863
Cellular & pager related	2,629
Networking	
IT training	34,135
Management consulting	
Other	1,087
Totals	$ 624,871

SECTION 5 – OTHER

This section asks for O&M spending on ITS charges, debt service, and anything else that does not fit into the other categories above. Placing the cursor on the appropriate cell in the worksheet provides a definition of the desired data. Note that, currently, the **figure that the agencies supply for ITS charges is used for comparison only**. We calculate the per-agency ITS charges elsewhere using the data supplied by ITS. Note also that, to avoid double counting of IT costs, the agencies are instructed *not* to include OIRM charges or GIS-related charges from DNRP in this section. The IT-related components of these will already be included in the information provided by OIRM and DNRP.

Exhibit 2-10: Other O & M Spending Categories

Other O & M	FY03 Actuals
ITS charges	3,311,640
IT-related debt service	
All other O & M IT spending (please list):	
Total	$ 3,311,640

C. IT INVENTORY

The IT inventory workbooks consist of a single worksheet which asks for counts of servers, workstation, printers, and mobile devices.

PURPOSE

These workbooks ask each agency to count its major IT infrastructure components (servers, workstation, printers, and mobile devices) and to categorize them by usage, operating system, processor class, etc. This information is used to calculate support cost per device and support effort per device. It can also give the County insight into the complexity of its technical architecture and the relative age of the workstations.

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Open the file **King County IT Inventory Request – Agency.** On the "Overview" tab, change the cutoff date for the IT inventory to something appropriate. Also, be certain to fill in current contact information. Save this as your new file to use in preparing the customized workbooks for each agency.

Now open the file **King County IT Inventory Master.** There are no date-specific fields to be changed on the inventory workbook itself. However, as operating systems and processors become obsolete and are replaced by new ones, these fields will need to be updated. Be aware that these text updates will need to be propagated to every agency worksheet in the IT inventory master workbook[1], and in a number of graphs and tables used in the TCO report.

In the same way that you copied the agency worksheets from the IT goods & services master to the agency files, copy and save a file for each agency here. Be sure to click on the "Overview" tab before saving to ensure that this is the first worksheet displayed when the agency lead opens the workbook.

COMPLETING EACH WORKBOOK

SECTION 1 – SERVERS

This section asks the agencies to subtotal their server counts by use and operating system as shown in the matrix (Exhibit 2-11) below. Note that placing the cursor on the appropriate cell in the worksheet provides a definition of the desired data. As a check against the server inventory provided by ITS, we also ask the agency for the total number of servers they own which are managed by ITS.

1. Provide an inventory of your agency's deployed servers, excluding any used for SCADA or other control system (e.g., HVAC, security, etc.). Subtotal your servers according to the operating system they use. <u>Include only servers you manage, regardless of location.</u>

Exhibit 2-11 Subtotal of Server Counts

Primary Server Use	Count by Operating System									
	Windows	Linux	Unix	OS/400	MVS	VMS	MPE	Mac OS	Other	Totals
File & Print	2									2
Email										0
Application										0
Database	2									2
Web										0
Application Development/Test										0
Combination of above uses	4									4
Other										0
Totals	8	0	0	0	0	0	0	0	0	8
								Total agency-owned servers managed by ITS		

---

[1] One way to accomplish this is to select all the impacted worksheets and make the change in one. This should propagate to all selected sheets, however it is advisable to manually check each sheet. **Do not use this method to change comments as it may crash Excel.** Instead, make the desired changes to a range of comments, and then paste them into each of the other worksheets.

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SECTION 2 – PRINTERS

2. Provide an inventory of your agency's printers.

Exhibit 2-12: Inventory of Agency's Printers

Printer Type	Quantity
Dept./Agency	25
Workgroup	52
Personal	87
Total	164

SECTION 3 – DESKTOP WORKSTATIONS

Similar to the matrix of servers, this section asks the agencies to subtotal their deployed desktop workstations by processor class and operating system.

3. Provide an inventory of your agency's desktop workstations. If some positions routinely utilize multiple PCs (such as application developers), be sure to count them. Subtotal by operating system.

Exhibit 2-13: Subtotal Desktop Workstations

Processor Class	Windows 95 - ME	Windows NT	Windows 2000	Windows XP/Pro	Macintosh OS 7 - 9	Macintosh OS X	Linux	Non-Programmable Terminal	Other	Totals
Pentium 4			199	87						286
Pentium 3	22	13	86							121
Pentium 2	5	4	43							52
Pentium	12	8								20
486										0
386										0
RISC										0
Other	18		10							28
Totals	57	25	338	87	0	0	0	0	0	507

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SECTION 4 – OTHER WORKSTATIONS

In this section we ask for identical information regarding the agencies' workstations that are used for tasks other than direct support of agency staff.

4. Provide an inventory of your agency's classroom, lab, system monitoring, and public access workstations. Subtotal by operating system.

Exhibit 2-14: Subtotal for Tasks other than Direct Support of Agency Staff

Processor Class	Count by Operating System									
	Windows 95 - ME	Windows NT	Windows 2000	Windows XP/Pro	Macintosh OS 7 - 9	Macintosh OS X	Linux	Non-Programmable Terminal	Other	Totals
Pentium 4			2	1						3
Pentium 3			6							6
Pentium 2							2			2
Pentium										0
486										0
386										0
RISC										0
Other										0
Totals	0	0	8	1	0	0	2	0	0	11

SECTION 5 – MOBILE TECHNOLOGIES

Finally, we ask for counts of the computing devices not tied to a desktop.

5. Provide an inventory of your agency's County -provided and supported mobile computing devices.

Exhibit 2-15: Inventory of County-provided and supported Mobile Devices

Mobile Technologies	Quantity
Networked laptop	134
Non-networked laptop	6
Networked tablet PC	5
Non-networked tablet PC	
Networked PDA	
Non-networked PDA	14
Networked handheld	2
Non-networked handheld	
Mobile terminal (e.g., MDT)	
Other	
Total	161

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D. IT BUDGETS

The IT budget workbooks consist of a single worksheet which asks for O&M and capital budget information.
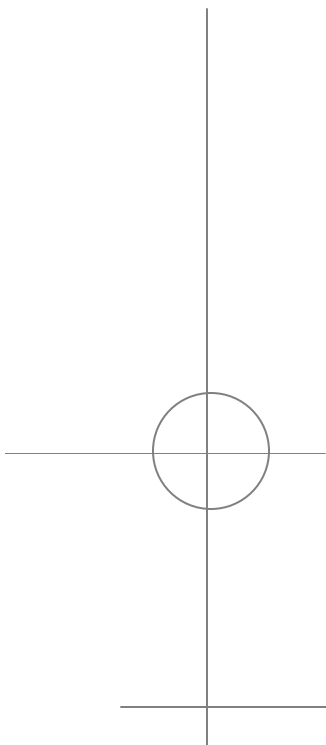
PURPOSE

These workbooks provide a summary of the IT operating and capital budgets for each agency. They are used only to provide a frame of reference for actual IT expenditures at the County.

PREPARING THE WORKBOOKS

Open the file **King County IT Budget Information Request – Agency.** On the "Overview" tab, change the FY dates to the current and following year. Also, be certain to fill in current contact information. Save this as your new file to use in preparing the customized workbooks for each agency.

Now open the file **King County IT Budget Master.** You will need to advance the FY references everywhere in this workbook by one year, including the ones imbedded in comments. When you do a find/replace, choose both "Values" and "Comments" in the advanced dialogue on the Find tab of the Find and Replace menu. Also, check the account numbers to make sure the budget codes have not changed. Save this as your new master file.

In the same way that you copied the agency worksheets from the IT inventory master to the agency files, copy and save a file for each agency here. Be sure to click on the "Overview" tab before saving to ensure that this is the first worksheet displayed when the agency lead opens the workbook.

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COMPLETING EACH WORKBOOK

SECTION 1 – IT O&M BUDGET SUMMARY

This section asks for annual operating and maintenance budgets in the categories of
hardware, software, and services as shown in the example below. Note that the sample
agency did not budget for hardware O&M – a possible issue for follow-up in data validation.

*1. Summarize your agency's FY03 O&M IT budget below, using the County's designated
accounts, or appropriately categorizing your FY03 IT budget if your agency/department did
not use the IT accounts.*

Exhibit 2-16: Summary of FY03 O&M IT Budget

FY03 O & M IT Budget Summary	FY03 Budget
Software	
Software Under $1000/unit (account 52190 or equiv.)	$91,000.00
Computer Software (account 56742 or equiv.)	
Hardware	
Inventoriable Minor Equipment (account 52185 or equiv.)	
Minor PC Upgrades/Repairs (account 52191 or equiv.)	
EDP Supplies (account 52212 or equiv.)	
Equipment O & M Accounts (account 52220 or equiv.)	
Telcom Supplies (account 52291 or equiv.)	
Computer Hardware (account 56741 or equiv.)	
Services:	
EDP & Microfiche/Film Svc (account 53106 or equiv.)	$200,000.00
Consulting IT Services (account 53127 or equiv.)	$30,000.00
Subcontract IT Services (account 53179 or equiv.)	
Repair/Maint -- IT Equipment (account 53634 or equiv.)	$117,170.00
Rent -- EDO Equipment (account 53740 or equiv.)	
Training -- IT (account 53813 or equiv.)	$28,000.00
Communication Equipment (account 56780 or equiv.)	
Capital IT Lease Pmt -- Principal (account 57303 or equiv.)	
Capital IT Lease Pmt -- Interest (account 57304 or equiv.)	
Totals	$ 466,170

SECTION 2 – IT CAPITAL BUDGET SUMMARY

This section asks for the next two years of IT capital budgets as shown in Exhibit 2-14 below.

*2. Record your agency's annual IT-related capital spending plan below from your FY 2003 &
2004 budget.*

Exhibit 2-17: FY03 & FY04 IT Capital Budgets

FY03 & FY04 Capital Budget Summary	FY03 Budget	FY04 Budget
Computer Software (account 56742 or equiv.)	$187,392.86	$43,000.00
Computer Hardware (account 56741 or equiv.)	$74,957.14	$259,000.00
Communication Equipment (account 56780 or equiv.)		
Consulting or other contracted IT services		
Internal labor:		
Labor budgeted in capital project funds		
O & M labor budgeted for work on capital projects		
Other		
Totals	$ 728,520	$ 302,000

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E. ITS INFO REQUEST

In addition to filling out the same workbooks as the other agencies, ITS must fill out an additional workbook detailing their charges to the other agencies for goods and services, labor, and applications. The only preparation needed for the ITS workbook: change the FY reference in each worksheet to the appropriate fiscal year.

PURPOSE

This workbook gathers the additional information from ITS needed to allocate their charges to the agencies. With this information, we can calculate per-agency labor, goods/services, and application costs more accurately.

GOODS AND SERVICES WORKSHEET

Completing this worksheet will require the ITS analyst to total the *portion of each agency's ITS charges that are related to goods and services (not labor) in each of the categories shown below*. Note that the column total for each agency should foot exactly to the amount indicated by ITS as the total ITS goods and services charged to that agency. This total, plus the total labor from the next worksheet, should equal total ITS charges to the agency, as shown in the equation below:

TOTAL ITS GOODS & SERVICES CHARGES + TOTAL ITS LABOR CHARGES = TOTAL ITS CHARGES

Additionally, in row 29 ITS should provide amounts spent from the CX fund on behalf of each agency for personal productivity licenses. These expenditures are *not* included in the total of ITS charges.

A portion of the worksheet appears on the following page. The remaining agencies appear in columns to the right.
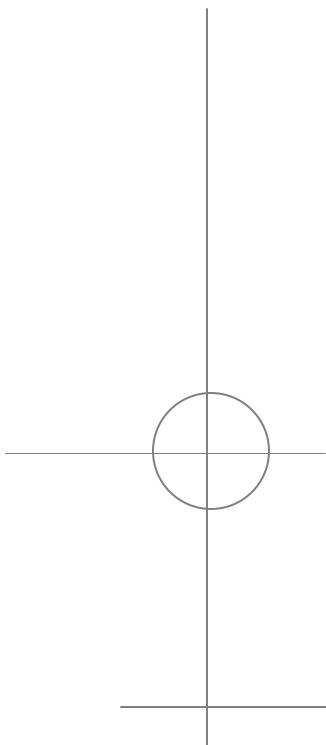
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Exhibit 2-18: Goods and Services Worksheet

	FY03 Actual ITS Charges to Agencies					
	O & M Goods and Services					
	Assessor	Council	Pros. Atty	Sup Court	Dist Court	Sheriff
Workstations/Email	$ 14,668	$ 11,076	$ 37,877	$ 32,032	$ 15,184	$ 69,879
Servers (DSS)			$ 7,027	$ 6,446	$ 1,180	
Mainframe	$ 56,197	$ 1,018	$ 86,484	$ 1,192	$ 1,665	$ 102,029
Networking	$ 85,013	$ 58,382	$ 179,796	$ 147,767	$ 83,610	$ 388,651
Telecomm	$ 10,470	$ 7,484	$ 17,903	$ 16,631	$ 26,882	$ 44,119
Professional Services (ADSS)	$ 9,152	$ 939	$ 16,779	$ 16,779	$ 4,328	$ 24,767
License Fees:						
ARMS						
IBIS						
EssBase						
PeopleSoft						
MSA						
Fixed Asset						
Other finance						
Other HR						
Other payroll						
Other budget						
Email/calendaring						
Personal productivity						
All other agency apps						
LAN						
Debt Service	$ 60,215	$ 11,720	$ 52,926	$ 30,469	$ 16,820	$ 94,084
All Other Charges (Hosting, etc.)	$ 7,200			$ 2,025		$ 1,696
TOTAL	$ 242,915	$ 90,619	$ 398,792	$ 253,341	$ 149,669	$ 725,225

CX fund personal productivity licenses	**$92,707**		**$90,861**	**$75,002**	**$64,593**	**$175,431**

LABOR WORKSHEET

In a similar fashion to the Goods & Services Worksheet, this worksheet asks ITS to apportion the labor part of each agency's charges across the same IT staffing matrix shown earlier. Note that we ask only for cost, not labor effort. Because we already know what the ITS cost per FTE is for each function, it is a simple matter to calculate the implied labor effort associated with ITS labor charges.

The exhibit on the next page shows a sample of what ITS provided in FY 2003. As before, the agencies not shown appear in additional columns off to the right.

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Exhibit 2-16: Labor Workbook – ITS Data provided in FY03

ITS Labor Charges	Assessor	Council	Pros. Atty	Sup Court	Dist Court	Sheriff
Customer Services						
Help Desk (Tier 1)	$ 2,958	$ 2,027	$ 6,256	$ 5,142	$ 2,909	$ 13,523
Tier 2 support:						
Desktop PC support						
PDA support						
Other portable/specialized device support						
Personal productivity tool support						
Business application support						
Training						
System Services						
Network connectivity (WAN/LAN/wireless)	$ 29,110	$ 19,950	$ 61,566	$ 50,600	$ 28,629	$133,082
Workstation administration						
Server administration:						
Email administration	$ 8,803	$ 6,769	$ 22,731	$ 19,236	$ 9,113	$ 41,931
File/print administration						
GIS server administration						
Application server administration (DSS)			$ 13,609	$ 24,249	$ 820	
Other server administration				$ 2,199		$ 1,832
Mainframe operations & administration	$ 31,732	$ 574	$ 48,833	$ 673	$ 1,258	$ 57,283
Data center operations						
Database administration						
Security administration						
Telephone systems support	$ 7,127	$ 5,095	$ 12,187	$ 11,321	$ 18,299	$ 30,032
Business Application Services						
Application development:						
Website design/maintenance	$ 8,395	$ 1,778	$ 5,486	$ 4,509	$ 2,551	$ 11,859
Desktop application development/maintenance						
GIS application development/maintenance						
All other development						
Requirements analysis	$ 113	$ 77	$ 239	$ 196	$ 111	$ 516
Data administration						
Application administration	$ 6,550	$ 3,800	$ 13,520	$ 11,498	$ 5,775	$ 27,741
Custom application maintenance:						
ARMS						
IBIS						
EssBase						
Other finance						
Other HR						
Other payroll					$ 2,386	$ 13,074
Other budget						
Agency app 1						
Agency app 2						
All other (Incl. CIP)	$ 46,528	$ 4,772		$ 85,302	$ 17,100	$112,842
Package application maintenance:						
PeopleSoft						
MSA						
Fixed Asset						
Other finance						
Other HR						
Other payroll						
Other budget						
Agency app 1						
Agency app 2						
All other			$ 85,302			
IT Planning						
Strategic planning & governance	$ 2,379	$ 1,069	$ 4,662	$ 3,337	$ 1,775	$ 8,651
Research and development	$ 714	$ 321	$ 1,399	$ 1,001	$ 532	$ 2,595
Disaster recovery/planning	$ -	$ -	$ -	$ -	$ -	$ -
IT Administration						
Asset management	$ 3,093	$ 1,389	$ 6,061	$ 4,338	$ 2,307	$ 11,247
IT procurement	$ 4,639	$ 2,084	$ 9,092	$ 6,507	$ 3,461	$ 16,870
Project management	$ 4,282	$ 1,923	$ 8,392	$ 6,007	$ 3,195	$ 15,573
Standards and policies development	$ 1,071	$ 481	$ 2,098	$ 1,502	$ 799	$ 3,893
Administrative support	$ 19,508	$ 8,763	$ 38,232	$ 27,363	$ 14,554	$ 70,942
Departmental management	$ 16,296	$ 7,320	$ 31,937	$ 22,858	$ 12,158	$ 59,262
COST TOTAL	$193,297	$ 68,191	$371,603	$287,838	$127,732	$632,750

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APPLICATION WORKSHEET

The final worksheet ITS must complete includes *labor along with goods and services* for the major applications shown in the example below. **Note that these charges will *not* be added to the ones collected in the previous two worksheets. This is simply a way to gather charge information that will allow calculation of the per-agency cost for these applications.**

Again, the remaining agencies appear in additional columns to the right.

Exhibit 2-17: Labor and Goods & Services for Major Applications

FY03 Actual Charges -- Major Applications						
	1	2	3	4	5	6
	Assessor	Council	Pros. Atty	Sup Court	Dist Court	Sheriff
ARMS						
IBIS						
EssBase						
PeopleSoft						
MSA						
Fixed Asset						
Other finance						
Other HR						
Other payroll						$ 5,011	$ 42,552
Other budget						
Email/calendaring						
Personal productivity						
All other agency apps						
All Other Charges	$ 172,518	$ 7,492	$ 271,869	$ 123,491	$ 25,733	$ 315,425
TOTAL	$ 172,518	$ 7,492	$ 271,869	$ 123,491	$ 30,744	$ 357,977

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This chapter gives instructions for updating each of the master spreadsheets in the TCO model, using the populated 2003 model as a starting point. We have organized it as:

♦ IT Staffing Master

♦ IT Goods & Services Master

♦ IT Inventory Master

♦ IT Budget Master

♦ TCO Analysis

Note that all of the master files should be updated by pasting in the data cells from the agency worksheets, rather than by copying the entire worksheets to the master files. This avoids disturbing the numerous links between the individual sheets in the master files. This process requires significant attention to detail – frequent saves are recommended as a means of avoiding re-work.

A. IT STAFFING MASTER

When you receive an updated staffing matrix from an agency, compare the number of columns in the master file for each of the three sheets (IT, Biz, Shdw) with the number of columns in the updated agency matrix. **If the agency matrix has more, you will need to insert the appropriate number of columns in the master before proceeding (use the procedure described in Chapter 2, Section A to accomplish this if necessary). This match is very important to maintaining the integrity of the master workbook.**

For each of the three sheets in the updated agency matrix, simply select the data cells in rows 1 through 66, from column C through the one just before the total column. Copy/paste these into the master file. Do the same for the salary data in row 69. That's it!

B. IT GOODS & SERVICES MASTER

The Goods & Services Master contains two worksheets with chargeback information from ITS which must be updated – *ITS G&S Charges* and *ITS App Charges.* Using the same approach as for the Staffing Master, simply do a copy/paste of the data cells from the ITS information request workbook to the master file.

Otherwise, the remaining Goods & Services Master file worksheets use an identical approach for integrating data from the agency IT goods and services request workbooks. The main thing you need to check before pasting in the data is to make sure that the agency hasn't added or deleted rows. The simplest way to do this is to click on the "Totals" cell for each section of the agency IT spending request workbook and make sure it has the correct row and column. As shown in exhibit 4-1 on the next page, these are:

♦ Section 2 – B30

♦ Section 3 – B44

♦ Section 4 – B59

♦ Section 5 – B69

If the cell references do not match, you will need to make the edits necessary to restore the worksheet to its original configuration.

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Exhibit 4-1: Goods & Services Master File Worksheet

2. Record your agency's actual FY03 O & M software license spending as c

Software (O & M)	FY03 Actuals
MSA system maintenance	
PeopleSoft system maintenance	
Fixed Asset system maintenance	
Other financial management system maintenance	
Other payroll system maintenance	
Other budget system maintenance	
Other HR system maintenance	
Agency Packaged App 1	
Agency Packaged App 2	
Database system maintenance/license	
System software licenses	
Mainframe OS & utilities	
Desktop operating systems	
Telco software	
Personal productivity licenses	$92,707.00
Other	
Totals	$92,707.00

B 30

3. Record your agency's O & M IT hardware spending as categorized below

Hardware (O & M)	FY03 Actuals
Workstations	
Servers	
Mainframe computers	
Mid-range computers	
Mobile devices (e.g., laptops, handhelds, tablets)	
Storage	
Network equipment/infrastructure	
Telco back-end	
Printers	
Other	
Totals	$ -

B 44

4. Record your agency's O & M IT services spending to external (non-Coun

External Services (O & M)	FY03 Actuals
Application development	
Application maintenance	
Workstation support	
Server support	
Telecom:	
Land-line related	
Cellular & pager related	
Networking	
IT training	
Management consulting	
Other	
Totals	$ -

B 59

5. Record your agency's other annual IT-related spending below from FY 2(

Other O & M	FY03 Actuals
ITS charges	$436,212.00
IT-related debt service	
All other O & M IT spending (please list):	
Total	$ 436,212

B 69

You will need to do this for all 19 agency spending request workbooks. Assuming these are correct, simply select all the rows with text and data, beginning in the upper left corner, and copy/paste them into the master file.

After you have pasted the updated information into the 19 agency worksheets, you will need to manually paste the values from row 29 of the "IT G&S Charges" into cell D29 of the agency worksheets. See exhibit 4-2 below.

Exhibit 4-2: Pasting the value from IT G & S Charges

C. IT INVENTORY MASTER

As with the previous master files, use a copy and paste approach to integrating agency data into the master. Again, verify that the agency hasn't added or deleted rows. The "Totals" cells to check for the inventory master are as shown in exhibit 4-3 on the following page:

♦ Section 1 – B18

♦ Section 2 – B25

♦ Section 3 – B39

♦ Section 4 – B53

♦ Section 5 – B67

Assuming these are correct, simply select all the rows with text and data, beginning in the upper left corner, and copy/paste them into the master file. If the cell references do not match, you will need to make the edits necessary to restore the worksheet to its original configuration.

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Exhibit 4-3: Integrating Agency Data into the Inventory Master

1. Provide an inventory of your agency's deployed servers, excluding any used for SCADA or other control system (e.g., HVAC, security, etc.). Subtotal your servers according to the operating system they use. *Include only servers you manage, regardless of location.*

Primary Server Use	Windows	Linux	Unix	OS/400	MVS	VMS	MPE	Mac OS	Other	Totals
File & Print	2									2
Email										0
Application										0
Database	2									2
Web										0
Application Development/Test										0
Combination of above uses	4									4
Other										0
Totals	8	0	0	0	0	0	0	0	0	8

B 18 →

Total agency-owned servers managed by ITS

2. Provide an inventory of your agency's deployed printers.

Printer Type	Quantity
Dept./Agency	
Workgroup	36
Personal	14
Total	50

B 25 →

3. Provide an inventory of your agency's deployed desktop workstations. If some positions routinely utilize multiple PCs (such as application developers), be sure to count them. Subtotal by operating

Processor Class	Windows 95 - ME	Windows NT	Windows 2000	Windows XP/Pro	Macintosh OS 7 - 9	Macintosh OS X	Linux	Non-Programmable Terminal	Other	Totals
Pentium 4				146						146
Pentium 3										0
Pentium 2										0
Pentium										0
486										0
386										0
RISC										0
Other										0
Totals	0	0	0	146	0	0	0	0	0	146

B 39 →

4. Provide an inventory of your agency's deployed classroom, lab, system monitoring, and public access workstations. Subtotal by operating system.

Processor Class	Windows 95 - ME	Windows NT	Windows 2000	Windows XP/Pro	Macintosh OS 7 - 9	Macintosh OS X	Linux	Non-Programmable Terminal	Other	Totals
Pentium 4				2						2
Pentium 3										0
Pentium 2										0
Pentium										0
486										0
386										0
RISC										0
Other				9						9
Totals	0	0	0	11	0	0	0	0	0	11

B 53 →

5. Provide an inventory of your agency's County-provided and supported mobile computing devices.

Mobile Technologies	Quantity
Networked laptop	124
Non-networked laptop	
Networked tablet PC	
Non-networked tablet PC	
Networked PDA	
Non-networked PDA	
Networked handheld	
Non-networked handheld	
Mobile terminal (e.g., MDT)	
Other	
Total	124

B 67 →

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D. IT BUDGET MASTER

As with the previous master files, use a copy and paste approach to integrating agency data into the master. Again, verify that the agency hasn't added or deleted rows. The "Totals" cells to check for the budget master are as shown in exhibit 4-4 below:

♦ Section 1 – B35

♦ Section 2 – B47

Assuming these are correct, simply select all the rows with text and data, beginning in the upper left corner, and copy/paste them into the master file. If the cell references do not match, you will need to make the edits necessary to restore the worksheet to its original configuration.

Exhibit 4-4: Integrating Agency Data into the Budget Master

FY03 O & M IT Budget Summary	FY03 Budget
Software	
Software Under $1000/unit (account 52190 or equiv.)	$1,788.00
Computer Software (account 56742 or equiv.)	
Hardware	
Inventoriable Minor Equipment (account 52185 or equiv.)	
Minor PC Upgrades/Repairs (account 52191 or equiv.)	$8,498.00
EDP Supplies (account 52212 or equiv.)	
Equipment O & M Accounts (account 52220 or equiv.)	
Telcom Supplies (account 52291 or equiv.)	$1,025.00
Computer Hardware (account 56741 or equiv.)	$149,671.00
Services:	
EDP & Microfiche/Film Svc (account 53106 or equiv.)	$19,090.00
Consulting IT Services (account 53127 or equiv.)	
Subcontract IT Services (account 53179 or equiv.)	
Repair/Maint -- IT Equipment (account 53634 or equiv.)	
Rent -- EDO Equipment (account 53740 or equiv.)	
Training -- IT (account 53813 or equiv.)	
Communication Equipment (account 56780 or equiv.)	
Capital IT Lease Pmt -- Principal (account 57303 or equiv.)	
Capital IT Lease Pmt -- Interest (account 57304 or equiv.)	
B 35 ➤ Totals	$ 180,072

2. Record your agency's annual IT-related capital spending plan below from your FY

FY03 & FY04 Capital Budget Summary	FY03 Budget	FY04 Budget
Computer Software (account 56742 or equiv.)	$1,000.00	$1,000.00
Computer Hardware (account 56741 or equiv.)	$6,300.00	$6,300.00
Communication Equipment (account 56780 or equiv.)		
Consulting or other contracted IT services		
Internal labor:		
Labor budgeted in capital project funds		
O & M labor budgeted for work on capital projects		
Other		
B 47 ➤ Totals	$7,300.00	$7,300.00

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E. TCO ANALYSIS

The TCO analysis workbook contains one worksheet with ITS labor chargebacks to the agencies which must be updated. After verifying that rows have not been added to or deleted from the worksheet, simply do a copy/paste of the data cells C2:U66 from the ITS information request to the *ITS Labor Charges* worksheet in the TCO analysis spreadsheet.

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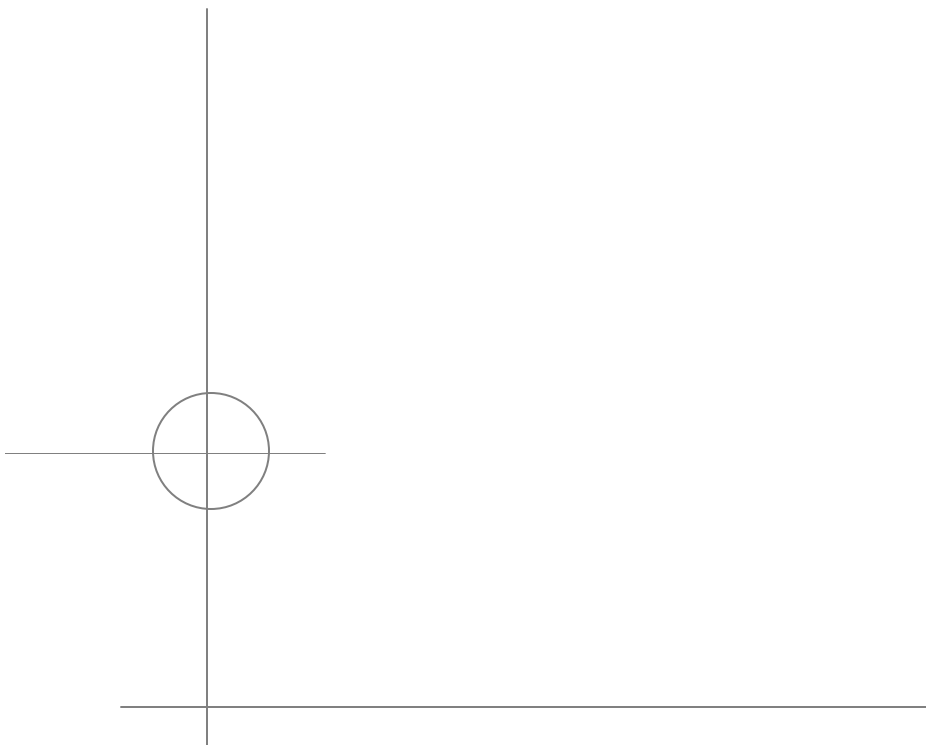
This chapter gives instructions for validating the integrity of the model and manipulating the tables that may need some manual intervention. We have organized it as:

♦ IT Staffing Master

♦ IT Goods & Services Master

♦ IT Inventory Master

♦ IT Budget Master

♦ TCO Analysis

♦ Appendix B

The tasks outlined in this chapter focus on common errors that can occur when updating the workbooks, and on ways to validate the data internally and externally.

A. IT STAFFING MASTER

Since you have pasted in only data cells from the agency spreadsheets, formula errors should be minimal. Check the following in the three sheets (IT, Biz, Shdw) for each agency:

♦ The formulas in rows 67, 68, and 70 should extend to every data column

♦ The formulas in the total columns should reference the cells beginning in column C and extending to the last data column

♦ The Average JOAT[1] formula in cell C71 should reference all of the data columns

♦ The Overall Round COOKS[2] formula in cell C72 should reference the final column in the table, Round COOKS

Also, check the JOAT formula in cell C71 on the summary sheet for each agency to make sure that it references the same ranges as the 3 formulas in C71 on the detail sheets. If no errors are found in these formulas, then there are unlikely to be any elsewhere in the workbook.

The most common data error in agency worksheets is IT and business unit staff who total up to more or less than 1.00 FTE. They are easy to find – just scan row 67.

There may be valid reasons for reporting less than 1.00 FTE. Staff might be hired at less than full time, might be contractors, or might be specifically assigned some non-IT duties as part of their job. If necessary, you will have to follow up with the agency to get an explanation for these.

The only case where there should be more than 1.00 FTE of effort for any individual is if they are routinely working and being paid overtime. For instance, if a staff person is regularly paid 8 hours of overtime in addition to their regular 40 hour work week, then their FTE total would be 1.20. Their annualized pay should not include overtime, as the FTE total will take this in to account. Exempt salaried staff should never exceed 1.00 FTE, but their annualized pay should include any bonus or merit pay.

---

[1] **JOAT** – "jack of all trades." This counts the number of IT service functions performed by each individual – for instance, one person might perform e-mail administration, database administration, help desk, and project management; giving that individual a JOAT number of 4. The overall JOAT number for an agency is the average JOAT number for all of its staff. Simply, this number provides an indication of how many multiple IT service "hats" are worn by each individual within an organization.
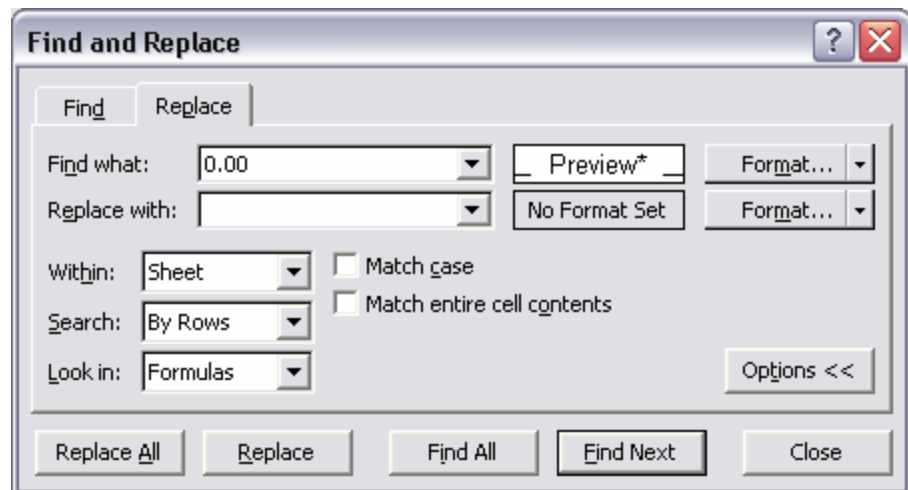
[2] **COOKS** – a measure of staff allocation efficiency, developed by Pacific Technologies, from the old saying "Too many cooks spoil the soup." This number measures the excess FTE count beyond the FTE effort level required for a particular function. For example, an agency might have 5.5 FTE of server administration performed by 8 staff. This amount of service could be provided by as few as 6 individuals, so the COOKS number would be 2

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Another common data error is the use of zeroes rather than blanks to indicate functions that a staff person does not perform. Often, this comes about as the agency edits the data, so the zeroes are scattered about the matrix and are hard to spot. You need to eliminate them, because they interfere with the COOKS and JOAT formulas. The simplest way is to do a find/replace on values in the matrix formatted to 0.00 as shown below.

Exhibit 4-1: Perform a Find and Replace for 0.00
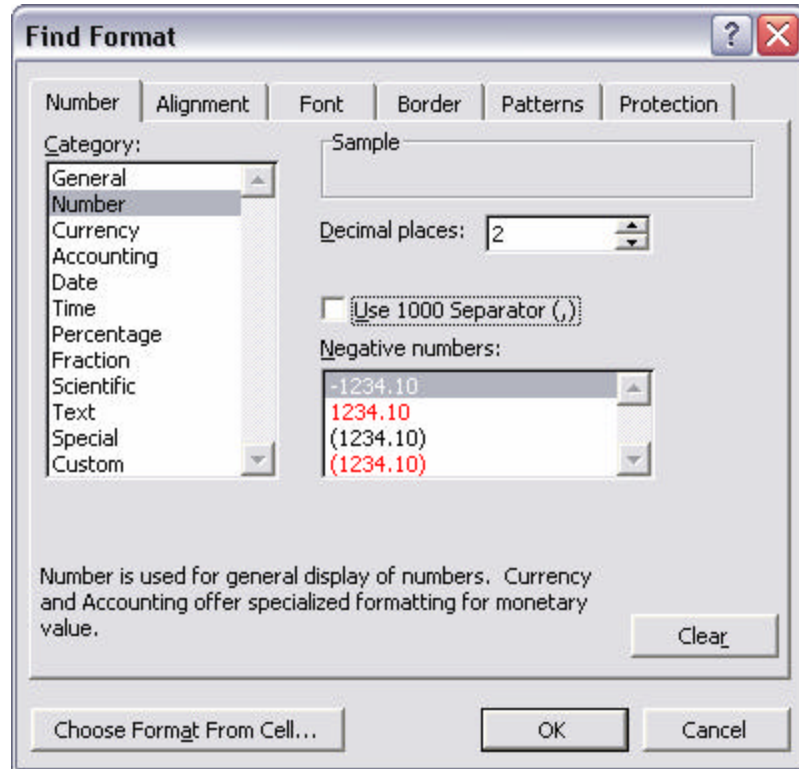
Choose the 2-decimal number format for Find as shown above.

Find all instances of 0.00 in the data portion of the matrix and replace them with blanks.

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In addition, an external consistency check can be performed by comparing the number of IT-titled positions as reported by the agency's payroll system with the number of IT staff in the agency's IT division and business units.

B. IT GOODS & SERVICES MASTER

The internal validation for this workbook is fairly simple. Make sure the total formulas in each table reference the proper ranges. **Look for OIRM and GIS inter-agency charges, and remove them to avoid double-counting, since the IT cost of these is already included in the expenditures of OIRM and DNRP.**

For external validation, the agency's IT expenditures can be compared to the appropriate reports from ARMS and/or IBIS. However, some expenditure categories will not match exactly. You can also compare the agency's ITS expenditures against the totals provided by ITS.

C. IT INVENTORY MASTER

Validation for this workbook is limited. Make sure the row and column total formulas are correct. If the number of desktop workstations greatly exceeds the number of agency staff then something is amiss. Verify that the server inventory includes all the servers that are managed by the agency, even if they are in the ITS data center. The server inventory should *exclude* servers managed by ITS, even if they are owned by the agency.

Since the County does not currently have an inventory system to track its IT equipment, an external validation is not possible.

D. IT BUDGET MASTER

There is little validation to be done for this workbook. Make sure the total formulas are correct. It may be possible to compare what the agencies report against what is in the County budget system, but again budget categories may not exactly align.

E. TCO ANALYSIS

This workbook is the most significant of the model. If anything goes wrong it is most likely to show up here. We discuss each major section of the workbook, with color-coded tabs.

LINKS AND CONSTANTS – RED TABS

To simplify the formulas in this workbook, a "links page" contains many of the references to the other workbooks. Carefully check this page for any errors (such as #REF or #VALUE,) and look to see that values are within reasonable ranges.

The "constants sheet" contains the overhead formula for labor which may need adjustment. At this point, the formula multiplies a flat rate times the FTE level to determine overhead. It also supports up to 2 percentage-based factors which are currently not used.

The constants sheet also has the table which links the agency shorthand codes to short and long versions of their names. The names can be edited as desired.

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Analysis

TCO REPORT CHAPTERS – GREEN TABS

All of these sheets begin with a number which corresponds to the chapter in the TCO report where the graphs and tables are used. Many of them also have a letter which corresponds to the section. The tab name ends with an abbreviation of the chapter content. For instance, the tab "6.B.app.program" contains the tables and graphs for Chapter 6, Section B, Expenditures by Budget Program.

The tables and graphs should all update automatically with changes in the underlying spreadsheets. However you will still need to go through each sheet to make sure that the data labels on the pie charts and bar charts are placed in a readable position.

INTERMEDIATE AND ALTERNATE ANALYSIS – YELLOW TABS

These sheets perform some of the intermediate calculations needed between the base data and the report level presentation. They also present some analysis not used in the current report which may prove useful in the future.

The App TCO sheet calculates total agency cost per major application based on a combination of agency and ITS charge data. Specifically, it collects and summarizes the ITS charges, per agency, goods & services, and agency labor for each of the major County applications and other application categories. PTI provided this information to the County for use in the QBC project. Any future analysis related to the QBC may require updating and using the information included in the App TCO sheet.

The Server Analysis sheet is fairly straightforward and should need no modification. The same cannot be said for the WS Analysis sheet. Based on information provided by ITS the formula for allocating ITS help desk staff assigns some of them directly to specific agencies, and spreads the rest around to the remaining agencies based on PC count. The agencies with direct ITS staff allocation are on row 40. Note that formula on row 44 for these agencies is different from the others. Update with caution!

COOKS Analysis is not used in the current report but may be in the future.

F. TCO REPORT APPENDIX B

This workbook requires a fair amount of manual updating due to the amount of detail it contains. Fortunately the update tasks are identical for all 19 agencies.

There are three sheets for each agency. All of the manual updates are to the pie charts on the first sheet. Each pie chart has a total in a text box which must be typed in. You cannot paste from a cell into the text box.

The two pie charts at the top of the sheet have their calculated totals in cells A21 and C21, which are highlighted in yellow. Be sure the text box matches. Now scroll down the sheet to cell B78. Make sure the total here matches the text box for the pie chart below it, and also the total shown in cell A109 which is highlighted in yellow.

Repeat for all 19 agencies. If you find any discrepancies in the totals, you will have to track the formula references back through the TCO Analysis and on to the underlying master file.

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This chapter discusses potential structural changes to the model and suggests some areas analysis that may be of interest in the future. It also outlines issues, concerns, and recommendations identified by PTI that the County might consider prior to conducting this exercise again in the future.

A. STRUCTURAL CHANGES

Changes to the structure of the model should be approached with caution – make sure you understand how it works before you change it! **In particular, the 19 agency structure is firmly embedded in the design of the model.**

ADDING AGENCIES

Choose a shorthand for the new agency – we will use 20.New in this discussion. Adding it to the end of the list is much easier than trying to insert it in the middle and then re-numbering! Add the new agency name to the table on the Constants page.

For each of the four master workbooks, you will need to create a copy of an existing agency sheet and append the new sheet to the end of the workbook. Change the tab names to 20.New. In the case of the IT staffing master, you will need to do this for all three agency data sheets. Delete existing data from the cells.

For the IT staffing master, you will also need to duplicate the first level summary sheet and find/replace the existing agency shorthand with 20.New on all the formulas it contains.

All of the master workbooks contain one or more summary sheets with agency totals arranged in columns. For each of these sheets, select the 19.DES Other column and copy it. With the column still selected, right-click to insert copied cells. This makes the total formulas adjust automatically. Now select the rightmost 19.DES Other column and find/replace 19.DES with 20.New.

There are a number of summary sheets in the TCO analysis workbook which also have agency totals arranged in columns. Follow the same procedure to add 20.New to these.

The tables in TCO Analysis which present various agency totals by row are trickier. These are often sorted alphabetically by agency name, but sometimes by other criteria. Identify where the new agency should go, and insert a row there. Then look at the other agencies in the table to determine what the formula should be. Make sure any graphs that reference the table point to the proper data range.

Finally, Appendix B needs to be updated. Duplicate an existing set of three sheets for 20.New. In general, the links in Appendix B point to tables with totals that are in columns, so you should be able to just advance each formula by one letter value. There are a couple of obvious exceptions to this, for instance cell D62 which points to a table in the TCO analysis which has agency totals arranged in rows. You will need to manually find the correct row in these cases.

DELETING AGENCIES

The simplest way to have fewer agencies is to clear their data cells in each of the master workbooks but leave the sheets in. This will produce blank rows in some of the tables and graphs. By re-sorting the tables, and adjusting the data ranges for the graphs, you can eliminate them.

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If you must permanently reduce the number of agencies, begin by removing them from Appendix B. Then take them out, by row or column, from the TCO Analysis. Remove them from the summary columns in the master workbooks. Finally, delete the underlying data sheets. Basically, you are working in the reverse of the order used to add an agency.

CHANGING FILE AND TAB NAMES

Make sure you open all of the master workbooks, the TCO Analysis, and the Appendix B file before you change any tab names. With the files open, these will propagate through to the links. Close all the files and save changes.

Use the same approach if you need to change a file name. With all the files open, do a "Save As" to the new file, then close all the files and save changes. Delete the old file (or move it to another folder), and re-open the new one to make sure the new file has the proper links.

B. FUTURE ANALYSIS

The TCO Analysis workbook contains some worksheets which are not used in the TCO report, but which may be of interest for future analysis. This section provides a general discussion of these areas.

TOTAL IT LABOR COST BY AGENCY & FUNCTION

The worksheet "Total Labor $ v.2" sums each agency's labor cost per IT function with ITS labor charges per IT function. This should give total agency labor costs for any particular IT function.

Note that the 2003 data, as detailed in the "ITS Labor $ Analysis" worksheet, shows a significant discrepancy between ITS costs and charges for IT functions. Future efforts may close this gap, making this analysis more valuable.

TOTAL IT GOODS & SERVICE COST BY AGENCY

The worksheet "ITS G&S $ Analysis" shows similar issues with the goods and services portion of ITS chargebacks. By categorizing these charges as software, hardware, external services, or other; and then comparing them to ITS expenditures; we see significant differentials.

Again, with better data, this analysis might yield interesting insights into total per-agency costs for hardware, software, and external services.

MAJOR APPLICATION COST BY AGENCY

The worksheet "App TCO" attempts to calculate per-agency costs related to major applications by summing ITS charges with the relevant labor and goods/services items from the agency. This analysis will also benefit from a closer correlation between ITS charges and costs.

COOKS ANALYSIS

The "COOKS Analysis" worksheet shows that (with the exception of ITS) the COOKS number tends to go up with increasing IT FTE levels at the County. This may prove significant, but without the context of a more detailed organizational study PTI did not feel it merited inclusion in the TCO report.

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CHANGING OVERHEAD ALLOCATIONS

The per-employee overhead rate is currently based on a flat charge added to the wage or salary of each individual in the staffing workbook (prorated for the percentage of FTE of IT effort they provide). This charge is calculated and maintained in the "Constants" worksheet of the TCO Analysis workbook.

If the County would like to change this value, it can simply change the component values used to calculate it in the "Constants" worksheet. Additionally, if the County would like to apply a new rate based on percentage of wage or salary, it can adjust the values for Direct Overhead rate or Floorspace & Administrative Overhead. These are currently set at zero, but are included in the total overhead calculation.

C. LESSONS LEARNED

In the course of developing the total operating cost of IT model for the County, PTI identified several areas where the process and model could be streamlined, refined, or otherwise improved. These are presented below.

♦ Consider not collecting the budget information (or simply use reports from the budget system), as this data is not used in any significant way in the analysis and focuses on planning rather than total expenditures – a significantly different area

♦ Consider not collecting ITS charge information from the agencies, since the model uses the values provided by ITS instead

♦ Simplify the data collection process: Either use a more structured data collection mechanism (e.g., refine the IT cost tracking functionality of the County's accounting and personnel systems and use that data) or reduce the granularity of the data collected and focus on key areas of interest

♦ Set up the processes and mechanisms for validating the data before the next TCO project begins, and perform the validation – isolated from the TCO analysts – prior to analyzing the data

♦ Similarly, the County might want to include an estimate of each agency's IT expenditures (based on IBIS or Arms data for the appropriate account codes) along with the data request forms in an effort to help the agencies validate their responses prior to submittal

♦ Try to identify a better way of handling the ITS charges, as they were not well aligned with the dimensions of analysis (requiring estimation by ITS, particularly for labor charge allocations), and the current approach necessitated presenting most costs two different ways (expenditures and expenditures plus charges), which was occasionally confusing for the reader

♦ If the County is interested in better tracking hardware costs and support at the "type of usage" level (e.g., print sever costs, PDA costs, etc.), then the inventory needs to be more exactly aligned with the staffing matrix categories, and the staff filling out the staffing matrices need to be extra diligent in applying labor effort to the correct categories

♦ Last, the process is a lot of work for everyone involved – don't underestimate the time, commitment, and labor required

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Appendix A:
Master Checklist

The appendix presents a checklist of tasks which will help the project lead to organize and complete the annual update process. The checklist is supplied in the Excel file **KC Repeatable TCO Model Checklist.** The two figures below illustrate the master checklist and the detailed checklist for the agency workbooks.

Figure 1: Master Checklist

Master Checklist		
Reference	**Task**	**Complete**
N/A	Identify and Communicate with agency leads	
Chapter 2A - 2D	Prepare and send agency workbooks (see next tab)	
Chapter 2E	Prepare and send ITS info request	
Chapter 2A - 2D	Receive updated agency workbooks (see next tab)	
Chapter 2E	Receive updated ITS info request	
Chapter 3A	Update IT Staffing Master	
Chapter 3B	Update IT Goods & Services Master	
Chapter 3C	Update IT Inventory Master	
Chapter 3D	Update IT Budget Master	
Chapter 3E	Update TCO Analysis	
Chapter 4A	Validate IT Staffing Master	
Chapter 4B	Validate IT Goods & Services Master	
Chapter 4C	Validate IT Inventory Master	
Chapter 4D	Validate IT Budget Master	
Chapter 4E	Validate TCO Analysis	
Chapter 4F	Validate Appendix B	

Figure 2: Agency Workbook Checklist

Agency Workbook Checklist										
		Contact Information	**Budget**		**Inventory**		**Good/Services**		**Staffing**		**Comments**
Report	**Agency**		Sent	Received	Sent	Received	Sent	Received	Sent	Received	
1	Assessor										
2	Council										
3	Prosecuting Attorney										
4	Superior Court										
5	District Court										
6	Sheriff										
7	Executive (B/E/F/O)										
8	Community & Human Services										
9	Adult & Juvenile Detention										
10	Judicial Administration										
11	Development & Environmental Services										
12	Public Health										
13	Natural Resources & Parks										
14	DOT Transit										
15	DOT Airport, Fleet, Roads										
16	DES Finance										
17	DES HR										
18	DES ITS										
19	DES Other										
	TOTALS		0	0	0	0	0	0	0	0	
	% complete		0%	0%	0%	0%	0%	0%	0%	0%	

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Appendix B:
Key TCO Lead
Contact Points

This appendix presents a listing of the key contact points between the TCO analysts and the TCO leads.

♦ Project initiation – the TCO analyst introduces his or herself to the TCO leads and updates the leads on the process

♦ Distribution of forms – the TCO analyst emails the forms to the leads

♦ Form walkthrough – the TCO analyst meets with the leads as a group to formally walk through the documents and the process, and to field any questions

♦ Reminder of form due date – two weeks after sending out the forms, the TCO analyst follows up with each lead, reminding them of the due date and fielding any further questions

♦ Acknowledge receipt of forms – the TCO analyst logs all submissions and lets the leads know that their submissions were received and deemed complete

♦ Follow up on data (as necessary) – if required, the TCO lead will communicate with individual TCO leads to address any questions about an agency's submission

♦ Solicit and receive feedback on draft of TCO – Once completed in draft form, the TCO leads will be invited to provide the TCO analyst with feedback on the TCO model

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Appendix C:
TCO Kickoff
Presentation
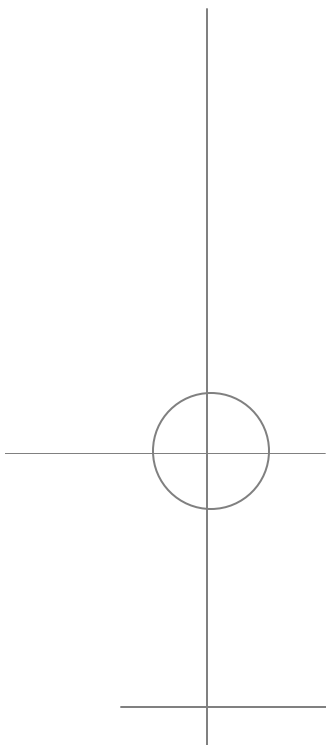
This appendix presents a copy of the PowerPoint presentation used by County staff to introduce the TCO leads to the project and their roles and responsibilities.

1
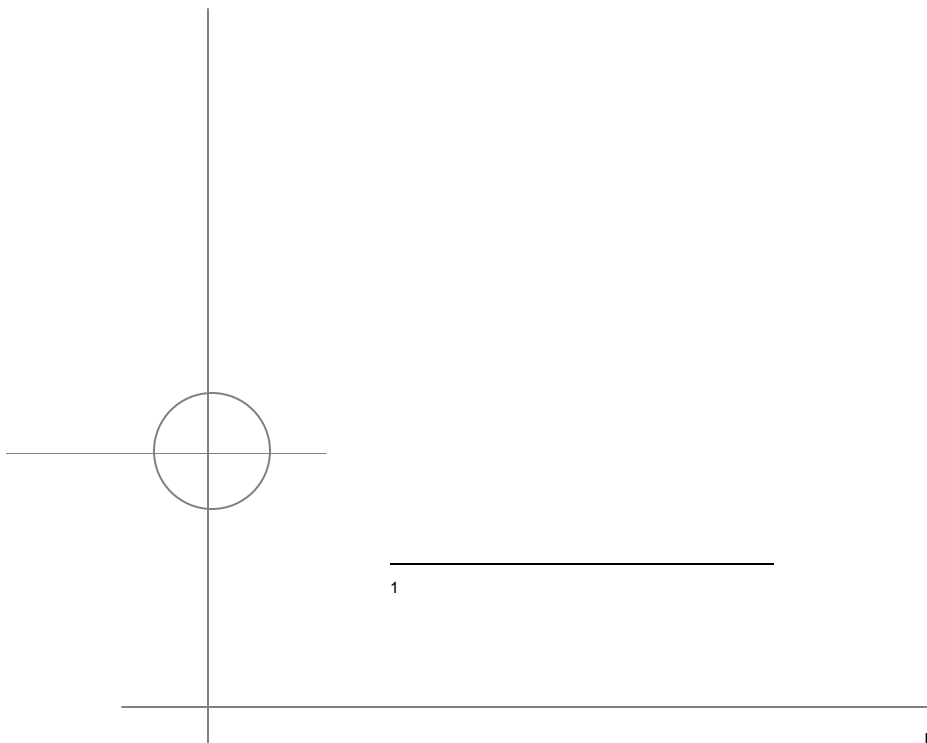
WELCOME

King County Technology Cost Kick-off Meeting

Office of Information Resource Management (OIRM)

February 17th, 2004

Technology Cost Objectives

- Identify county's cost of technology as asked by SAC and BATforce
- Identify technology cost for four business areas
  - financial, budget, HR and payroll
- Serve as input to IT Unification Project – BMC agreed it is important to understand the cost of the current model prior to engaging into any discussions regarding organizational structure

  It is one of the deliverables of the Financial Quantifiable Business Case Analysis (QBC) project.

Financial Business Case Analysis

Zlata Kauzlaric - Project Lead

Gary Lemenager - Contract Manager

Paul Tanaka - Business Sponsor

David Martinez - Program Sponsor

Caroline Whalen - Resource Coordinator

Office of Information Resource Management (OIRM)

February 17th, 2004

QBC Objective

- Develop Business Operations Model based on best practices and Quantifiable Business Case for implementation.

- Support policy and budgetary decisions for:
  - Transformation of business processes in preparation for system replacement: financial, budget, HR and payroll

➢ Identify cost of information technology.

- Deliver in time for the 2005 budget.

Advisory Committee

- Paul Tanaka, CAO
- David Martinez, CIO
- Steve Call, Budget Director
- Shelley Sutton (Council)
- Leesa Manion (Prosecutor)
- Bill Wilson (Sheriff's Office)
- Rich Medved (Assessor)
- Paul Sherfey (Superior Court)

Selected Consultant

- Dye Management Group, INC.,
  Bellevue WA, Bill Dye – President and Consulting
  Manager for this project

➢ Dye has engaged a sub-contractor:

  – Pacific Technologies, Inc., Bellevue WA, Mike
    Silverman & Dan Borgen, Co-CEOs

- Dye is the lead for the QBC report, PTI is the
  lead for the Total Cost Of Technology (TCO)
  report

Work Plan

	DEC	JAN	FEB	MAR	APR	MAY	JUN
1.0 Initiate Project	■	■					
2.0 Determine Technology Costs		■	■	■	■		
3.0 Develop Business Operations Model		■	■	■	■	■	
4.0 Draft Business Case					■	■	
5.0 Present Business Case							■

Department Involvement

➢ Technology Leads assist with identifying technology costs: IT labor and IT goods/services.

• Departments to assist with business labor cost for for business areas: budget, financials, human resources and payroll/

• Subject Matter Experts assist with Business Operation Model focus groups, surveys, and document reviews.

• Departments identified available business or operational documentation.

Technology Reports / Leads

Report Number	Agency - Separate Elected	Technology Lead	Note
1	Assessor	Hoang Nguyen	
2	Council	Paul Gaskil	
3	Prosecuting Attorney	David Ryan	
4	Superior Court	Kevin Daggett	
5	District Court	Cathy Grindle	
6	Sheriff	Diana Landry	
	Agency - Executive	**Technology Lead**	**Note**
7	Budget Office	Jim Walsh; this may need to be separate for QBC?	
	Office of the Executive	Anne Bruskland via Pam Cole, Lori McKay	
	Business Relations and Economic Development	Anne Bruskland	
	OIRM	Dana Spencer	
8	Community and Human Services		
9	Adult and Juvenile Detention	Tim Longley	
10	Judicial Administration	Joe Shuster	
11	Development and Environmental Services	Michael Pahl	
12	Public Health	Patty Schwendeman	
13	Natural Resource & Parks	Gary Hocking	
14-15	Transportation (2 reports)	Greg Scharrer	- Transit - Roads with Fleet and Airport
16-17-18-19	Executive Services (4 reports)	Finance – Craig Soper	Separate - QBC
		HR – Samuel Cardenas	Separate -QBC
		ITS - John Anthony	Separate as county wide provider
		FMD – Dave Preugschat REALS – Sean Bouffiou CAO Administration - Anne Bruskland Office of Risk Management - Anne Bruskland Office of Emergency Management - Anne Bruskland Office of Civil Rights - Anne Bruskland	Coordinator : Anne Bruskland

Next Steps

Feb 18th – Mar 1st:

- TCO leads coordinate data collection and fill out spreadsheets
- PTI available to assist with any questions regarding data collection; Contact directly:

    Dave Robison, Tel:(425) 881-3991 or
    DRobison@pticonsulting.com

- Return spreadsheets to Zlata Kauzlaric by March 1st, 04

PTI Consulting

- PTI Consulting Introduction
- IT Labor Matrix Spreadsheet Walk Thru
- IT Goods and Services Spreadsheet Walk Thru
- Overview of the TCO Report Content
- Questions/Answers